

DECISION RECORD AND FINDING OF NO SIGNIFICANT IMPACT

Double Eagle Petroleum Company (Double Eagle)
Catalina Unit CBNG Produced Water Disposal Project II EA (Catalina PH₂O EA)
EA No. WY-030-07-EA-244

Introduction

Double Eagle (of Casper, Wyoming) has proposed to implement a project in which 1.3 cubic feet per second (cfs) of produced water from their existing coalbed natural gas (CBNG) operations would be treated and then discharged to Muddy Creek, an intermittent/perennial watercourse. The project is located in Carbon County, Wyoming. The project is located primarily on federal surface and mineral estate administered by the Bureau of Land Management (BLM), Rawlins Field Office (RFO).

In December of 2005, Double Eagle submitted a proposal to discharge water from their CBNG operations in the Cow Creek/Catalina Unit area. In April of 2007, the BLM Rawlins Field Office (RFO) prepared an environmental assessment to analyze and disclose impacts from the proposal (WY-030-07-EA-001). On April 25, 2007, the RFO released the EA for a 30-day public review period and provided a press release to the news media (an earlier notification of the RFO's review of the project was posted to the BLM public website when the project EA was initiated, on October 3, 2006).

Double Eagle has obtained an approved Wyoming Pollution Discharge Elimination System (WYPDES) permit from the State of Wyoming Department of Environmental Quality- Water Quality Division (WDEQ), permit number WY0054038. This permit allows Double Eagle to discharge produced water under WDEQ's authorities to regulate discharges of water within the State of Wyoming under the Clean Water Act. The original proposal and WYPDES considered discharge of the produced water to ephemeral watercourse channels near the proposed water treatment facility.

As a result of the EA and in consideration of public comments, the BLM asked Double Eagle to consider revising the proposed action to reduce some anticipated impacts to ephemeral watercourses within the project area. Consequently, Double Eagle submitted a revised proposal which would pipe the treated produced water to Muddy Creek. A modification was approved to the WYPDES permit by WDEQ on December 3, 2007.

The Catalina Unit Coalbed Natural Gas Produced Water Disposal Project consists of the construction, operation, and eventual abandonment and reclamation of an EMIT water treatment facility. Treated, produced water would be discharged to Muddy Creek under Wyoming Department of Environmental Quality (WDEQ) Wyoming Pollution Discharge Elimination System (WYPDES) permit # WY0054038. A buried pipeline and outfall structure would be constructed to convey water to Muddy Creek. The project is located on BLM-administered public lands and fee estate. The life of the project is estimated to be 20 years.

The project is located in Township 16 North, Range 92 West, in Carbon County, Wyoming. Access to the project is provided by existing roads off of Highway 789. The project area is located approximately 28 miles north of Baggs, Wyoming.

Alternatives Considered

The Environmental Assessment (EA) for the Catalina PH₂O EA considered two alternatives. The Proposed Action Alternative assessed and disclosed the projected effects of the proponent's proposal as outlined above and detailed in the "Proposed Action" portion of the environmental assessment. The "No Action" alternative assessed the effects of not implementing any portion of the proposal. Under the No Action Alternative, the RFO analyzed the effects of a denial of any further development associated with this project. This alternative provides a benchmark, enabling the decision-maker to compare the magnitude of the environmental effects for the alternatives.

Other alternatives considered in the original EA (WY-030-07-EA-001), but not analyzed in detail, include (1) the development of additional water disposal (injection) wells and (2) the development of additional reservoir/storage capacity. The analysis of alternatives from the original EA was considered in this decision. The development of additional water disposal wells is not considered to meet the purpose and need ("the Proposed Action is necessary to provide for additional options in disposing of water within the Cow Creek/Catalina Unit CBNG development area"), since no additional options for water disposal would be provided. The development of additional reservoir/storage capacity was eliminated from detailed analysis since "the predicted impacts from the construction of 5 reservoirs [the number needed to replace the proposed discharge volume] may exceed those of the proposed action."

Decision

Based upon the analysis of the potential environmental impacts described in the EA, and in consideration of the public, agency, and industry comments received for the environmental assessment, the RFO has selected the Proposed Action alternative to be implemented. The decision incorporates the Approved Project Components listed below and Conditions of Approval provided in Appendix C to this Decision Record.

Approved Project Components

The decision authorizes the permit approvals for the following project components within the Catalina Unit CBNG Produced Water Disposal Project Area, subject to the Conditions of Approval (COAs) applied to the Sundry Notice application (Appendix C).

- Construction, operation, and reclamation of an EMIT water treatment facility for the treatment of produced water originating from coalbed natural gas wells in the project vicinity
- Construction of new buried pipeline to transport treated, produced water from the EMIT facility to Muddy Creek
- Construction of an outfall structure at the discharge point to reduce water velocity,
- Disposal of up to 1.3 cfs of produced water (and in accordance with WYPDES WY0054038) under Onshore Oil and Gas Order #7, and

- Monitoring and reporting of operations at the as required in the WYPDES permit and COAs.
- Collaborative agency monitoring will be developed to assess and adapt management of BLM Sensitive fish species and their habitat (flannelmouth sucker, bluehead sucker and roundtail chub).
- A Condition of Approval for photo-monitoring has been applied to identify potential adverse affects to populations and associated habitats in Muddy Creek below the point of discharge.

Rationale for Decision

The decision to approve the operator's proposed development was based upon the following factors:

1. Consistency with the Great Divide Resource Management Plan
2. National policy
3. Agency statutory requirements
4. Relevant resource and economic considerations
5. Application of measures to avoid or minimize environmental harm
6. Finding of no significant impact
7. Public comments, and
8. Consistency with the purpose and need for action

1. Consistency with Land Use and Resource Management Plans

The proposed action is in conformance with the planning direction developed for this area. The objective for oil and gas management decisions described in the Great Divide Resource Management Plan (1990) is to "provide for leasing, exploration, and development of oil and gas while protecting other resource values."

2. National Policy

Private exploration and development of federal oil and gas leases is an integral part of the Bureau of Land Management's oil and gas leasing program, under the authority of the *Mineral Leasing Act of 1920* and the *Federal Land Policy and Management Act of 1976*. The United States continues to rely heavily upon foreign energy sources. Oil and gas leasing encourages development of domestic oil and gas reserves, and reduces the United States' dependence upon foreign energy supplies. The Energy Policy Act of 2005 provides direction to Federal agencies to facilitate domestic energy production. Produced water disposal is necessary in order to explore and test the subject coalbed formations. Therefore, the decision is consistent with national policy.

3. Agency Statutory Requirements

The decision is consistent with all federal, state, and county authorizing actions required to implement the proposed action. All pertinent statutory requirements applicable to this proposal were considered.

4. Relevant Resource and Economic Considerations

Environmental impacts from the project to resources identified in the EA are minor, with mitigation, and are deemed acceptable. Positive economic benefits are expected from this proposal.

5. Application of Measures to Avoid or Minimize Environmental Harm

Federal environmental protection laws such as the *Clean Air Act*, the *Clean Water Act*, and *The Historic Preservation Act* apply to all lands and are included as part of the standard oil and gas lease terms. The adoption of the site-specific Conditions of Approval represents the best means to avoid or minimize environmental impacts as identified in the Environmental Assessment. This pilot project involves potential for impacts to BLM Sensitive fish species. The BLM, in cooperation with the Wyoming Game and Fish Department, will establish methods, conduct monitoring, and assess the effects of produced water discharge on habitat and populations in Muddy Creek below the discharge point. Monitoring results may be used to provide recommendations to the BLM Authorized Officer for adaptations to the produced water disposal method.

6. Finding of No Significant Impact

Based upon the analysis of potential environmental impacts contained in the EA, the Authorized Officer has determined that the Proposed Action, with implementation of the site-specific Conditions of Approval, would not cause a significant impact to the quality of the human environment. An Environmental Impact Statement is not necessary.

7. Public Comments

The BLM requested comments on the original EA from the public, local landowners; and Federal, State, Local and County Agencies. The BLM released a press release with a brief summary of the proposed action, location of the project, and information about how the public could comment. In addition, the original EA and its appendices and reference documents were posted on the BLM Wyoming internet site for review and downloading and copies of both EAs were available in Wyoming BLM Public Information Access Centers ("reading rooms") in Rawlins and Cheyenne. The original comment period ran from April 25, 2007 to May 25, 2007. The second EA for the Proposed Action was completed in November 2007. Notification of this EA preparation was posted to the BLM website. By posting the notification of NEPA preparation to the BLM website, the EA was also available for public review to any party who should request a copy; no such requests were made. A total of thirteen comment letters were received by the BLM. The summarized comments and BLM's responses are found in Appendix B of this Decision Record.

8. Purpose and Need for Action

The purpose of the proposed development is to exercise the lease holders' rights within the project to extract, and market gas products. Disposal of produced water is necessary to allow for continued natural gas production. The Proponent has indicated that the Proposed Action is necessary to provide for additional options in disposing of water within the Cow

Creek/Catalina Unit CBNG development area. National mineral leasing policies and the regulations by which they are enforced recognize the statutory right of lease holders to develop federal mineral resources to meet continuing national needs and economic demands so long as undue and unnecessary environmental degradation is not incurred.

Appeal

Under BLM regulation this decision is subject to appeal. Under BLM regulation, this decision is subject to administrative review in accordance with 43 CFR 3165. Any request for administrative review of this decision must include information required under 43 CFR 3165.3(b) (State Director Review), including all supporting documentation. Such a request must be filed in writing with the State Director, Bureau of Land Management, P.O. Box 1828, Cheyenne, Wyoming 82003 within 20 business days of the date this Decision Record is received or considered to have been received.

Patrick Madigan
Field Manager, Rawlins Field Office

3-3-08
Date

Appendix A to the Decision Record

ERRATA

Modifications and Corrections To The
Catalina Unit CBNG Produced Water Disposal Project II
Environmental Assessment

References & Citations

Add the following references:

Miller, Kirk A. 2003. Peak-flow Characteristics of Wyoming Streams. U.S. Department of the Interior – U.S. Geological Survey. Water-Resources Investigations Report 03-4107.

End Errata

Appendix B to the Decision Record

Summary of EA Comments and BLM Responses

The original EA (WY-030-07-EA-001, "original EA") was released for a 30-day public review period on April 25, 2007. A total of eleven comment letters were received (two after the close of comment period but prior to decision). After reviewing these comment letters, the RFO asked the proponent to consider revising the proposed action in order to address issues/resource conflicts identified in the EA and in public comment letters. The proponent agreed, and a second EA (WY-030-07-EA-244, "the EA") was completed on November 7, 2007. Notification of this EA preparation was posted to the BLM website. The RFO felt that substantive concerns brought forward by the Wyoming Game and Fish Department (WGFD) were not entirely addressed in the second EA, and so WGFD was provided a hard copy of the EA for review. By posting the notification of NEPA preparation to the BLM website, the EA was also available for public review to any party who should request a copy; no such requests were made. The Little Snake River Conservation District (LSRCD) requested, by letter on October 18, 2007 and subsequent telephone conversations, a copy of the second EA. LSRCD was provided a hard copy of the EA for review. WGFD and LSRCD both provided comments to this second EA.

All letters have been reviewed to determine whether the information they provided would warrant a determination other than a Finding of No Significant Impact (FONSI). Substantive comments are summarized below, with BLM responses to the comments in italics. Comments directed to the issue of potential impacts to ephemeral tributaries to Muddy Creek as a result of the original proposal have not been included, as these impacts are entirely avoided by piping directly to Muddy Creek. The RFO would like to thank all who commented for taking the time to review the EA.

Public Comment Responses

#	Received	Agency/Organization/Individual	Pages
1	5/18/2007	Wyoming Game and Fish Department	6
2	5/24/2007	U.S. Geological Survey	2
3	5/24/2007	Carl Babb (Double Eagle Consultant)	5
4	5/24/2007	Double Eagle Petroleum Company	7
5	5/24/2007	Hugh Lowham (Double Eagle Consultant)	29
6	5/24/2007	Little Snake River Conservation District	4
7	5/25/2007	U.S. Fish & Wildlife Service	8
8	5/25/2007	Wyoming Outdoor Council	6
9	5/25/2007	Wyoming Department of Agriculture	2
10	5/29/2007	Biodiversity Conservation Alliance	9
11	5/30/2007	Wyoming Dept. of Environmental Quality	2
12	11/15/2007	Wyoming Game and Fish Department	2
13	11/15/2007	Little Snake River Conservation District	2

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1. Wyoming Game and Fish Department (WGFD) – 05/18/2007

- a) **“...population estimates are provided for big game herds, but the population is not defined as whether it is post-season, end of year, or other.”**

The numbers for big game herd estimates were provided by personal communication between Tim Wooley, WGFD Game Biologist, and Rhen Etzelmiller, BLM Wildlife Biologist. These numbers represent the pre-season population estimates.

- b) **“...we could expect additional and incremental EAs to allow more surface discharges throughout the Atlantic Rim development area. This would preclude a meaningful disclosure and analysis of the significant cumulative effects of all discharges... [the EA analysis] would appear to warrant a supplemental EIS to the Atlantic Rim ROD be completed to address surface discharge to the Muddy Creek drainage. It would be reasonable to stop now and do a proper NEPA analysis for the expected cumulative discharges and impacts...”**

Currently, there are no other produced water surface disposal proposals within this area and located on BLM-administered public lands. The AR FEIS considered, and the AREIS ROD authorized, reinjection of produced water (see AREIS ROD, page 15). The AR FEIS addressed this proposed action (see AR FEIS, page 5-11) and indicates “BLM is considering this discharge under a separate analysis to determine significance. If the proposal is determined to be significant, a separate EIS will be required. If surface discharge of water becomes a significant method for produced water disposal in the ARPA, separate analysis may be needed that would consider the entire ARPA.”

The approach undertaken by the BLM is consistent with NEPA and BLM Policy.

- c) **“...Impacts to Muddy Creek would increase their [roundtail chub, bluehead sucker, flannelmouth sucker, and Colorado cutthroat trout] vulnerability to being petitioned under the Endangered Species Act.”**

Potential impacts to the sensitive fish in Muddy Creek are disclosed on pages 22-24 of the EA.

- d) **“The EA... fails to... address mitigation measures such as piping water either to the Little Snake River or High Savery Reservoir...”**

After considering the original proposal (discharge to ephemeral tributaries in the project area), the BLM asked the proponent to consider piping the discharge to a different location in order to address unresolved impacts. The proponent indicated that piping water 25 miles south to the Little Snake River or High Savery Reservoir would be prohibitively expensive, and would not be feasible (would not meet purpose and need).

- e) **“The EA... fails to... require monitoring and mitigation... of Muddy Creek...”**

Under Onshore Oil & Gas Order #7 (see page 1 of the original EA for a discussion of this Order), “Operations from the point of origin to the point of discharge are under the jurisdiction of the BLM. Operations from the point of discharge downstream are under the

jurisdiction of EPA or the primacy State.” The Wyoming Department of Environmental Quality has applied monitoring and mitigation measures to the WYPDES discharge permit.

- f) **“The EA... fails to... address potential cumulative impacts from future requests that are sure to come.”**

Cumulative impacts are addressed in the EA (see pages 26-29). No other reasonably foreseeable future actions involving produced water disposal to the surface within the CIAA are known. See answer, #1(b).

- g) **“...we remain very concerned that discharges of produced water will alter the chemical and/or physical characteristics of the system with unknown, but quite possibly negative ecological consequences [water temperature changes, channel degradation/changes, flow regime alteration, etc]...”**

The EA discloses the potential for produced water discharges to result in changes to the hydrologic (see page 20) and biologic setting (see pages 20-24 of the affected environment.

- h) **“Changes to the Muddy Creek drainage may be subtle enough that when population level changes are finally noted, habitat impacts may already be significant and much more difficult, or impossible, to mitigate.”**

See answer to #1(e). The Wyoming DEQ WYPDES permit will require that monitoring (in the form of acute and chronic WET tests) is conducted to assess if the water quality may result in mortality.

The State of Wyoming (DEQ) does not require fish population or habitat monitoring as a condition to the WYPDES authorization for this project. The Wyoming DEQ authorization (see WYPDES Permit #WY0054038, Pages ‘Statement of Basis’ 2-3), indicates that “The permit establishes effluent limits for the end of pipe, which are protective of all the designated uses defined in Chapter 1 of Wyoming Water Quality Rules and Regulations. This may include drinking water, game and non-game fish, fish consumption, aquatic life other than fish, recreation, agriculture, wildlife, industry and scenic value.”

2. U.S. Department of the Interior - U.S Geological Survey

- a) **“Miller (2003) was not included in the list of references...”**

This has been corrected (see “Errata”).

- b) **“[Salt and sediment loading analysis] merits reconsideration as many processes could be responsible for the observed salt concentration increases in the downstream direction.”**

This analysis (contained in the original EA) is no longer of concern, as the proposed action has been revised to address potential impacts from discharge of produced water to ephemeral channels.

- c) **“...increase in discharge is likely to increase [TDS] loads, perhaps in proportion to flow. If the discharged water is treated... it actually increases the potential for leaching additional salts...”**

See answer #2(b), above. This potential impact still may, however, cause adverse impacts to water quality in Muddy Creek since the “sediment-hungry” water after treatment will be discharged to Muddy Creek. The EA acknowledges that additional changes to water quality may occur after discharge, see Page 20 of the EA (“The treated discharge water will likely change in quality downstream, but to what extent is uncertain.”) and page 23 (“It is also possible that the produced water... would gather salts while traveling along its flow path”). The State of Wyoming WYPDES authorization addresses water quality protections provided under state regulations.

3. Carl Babb – Double Eagle Consultant

- a) **“An assumption of a 30-year life for a typical injection well is too optimistic.”**

We cannot substantiate your claim. Double Eagle and other AREIS proponents did not request other means of produced water disposal for full-field development in the AREIS area, with a life of project (LOP) of up to 50 years. Double Eagle and Anadarko have indicated that they believe reinjection for the LOP is feasible. The BLM has not received notification that reinjection for this period is infeasible from your contractor, Double Eagle, or other AREIS proponents.

4. Little Snake River Conservation District (LSRCD) – 05/24/2007

- a) **“The current proposal... has the potential to reduce, diminish, or eliminate many of the substantial gains [reduction in sediment] accomplished through the Muddy Creek Watershed Project.”**

The EA acknowledges that water quality parameters in Muddy Creek may be altered by implementation of the Proposed Action (see pages 20, 23). The Wyoming DEQ has regulatory authority to implement the Clean Water Act, and so the WYPDES authorization provides for the mechanism by which water quality and beneficial uses are protected by the primacy state.

- b) **“Under the direction of WY governor Dave Fruedenthal (sic) a working group of all state agencies, LSRCD, BLM, Anadarko, and Double Eagle was formed [to conduct a watershed evaluation of produced water discharge]... This violation of the agreement [by Double Eagle] to support this study would be further exacerbated by the BLM if you approved the current proposal... Consistent with the agreement of the working group established by the Governor we would suggest that before any approval of any surface water discharge... the study be completed... conditions upon any surface discharges should only be approved by BLM once a watershed based NPD[E]S permit is issued by DEQ.”**

We are not aware of any agreement by the BLM that would restrict our ability to authorize this action or that would require a watershed study in the manner you suggest. The BLM

has no authority to require the Wyoming DEQ to follow any particular process for WYPDES authorization, such as watershed-based permitting.

- c) **“There was lack of alternatives considered... ..additional alternatives should have included... [1] enlargement of the existing LSRC D reservoir, [2]...temporary test of water treatment into [the reservoir] with continued seasonal releases at a higher rate...”**

In the EAs, additional reservoir capacity was determined to be necessary; this capacity would approximately equal 5 similarly-sized reservoirs relative to the LSRC D reservoir. Thus, enlargement of the existing reservoir is infeasible due to topography and proximity to existing infrastructure. Much larger storage capacity would be required that could feasibly and reasonably be built, so the proponent has proposed discharge to Muddy Creek.

- d) **“There is no mention to the adverse affects (sic) on rangeland vegetation, livestock grazing or the grazing permittee.””**

Both EAs address potential impacts to vegetation and livestock (see pages 34-35 of the original EA and page 20 of the EA).

- e) **“The current proposal... will result in the inability to rotational (sic) graze livestock in this allotment...”**

This issue will be avoided by piping/discharge of water to Muddy Creek; the ephemeral channels acting as open sources throughout a large area, and across fenced pastures, will not be present under the revised proposal.

- f) **“...the EA fails to document the additional number of truck trips necessary to the facility to transport hydrochloric acid (HCl)... there is no mention of the safety protocols to be observed in the case of a spill on site or if a tanker... where (sic) to have an accident on BLM lands or roads.”**

The number of truck trips to transport HCl is unknown, but expected to be small (1 trip per month). This is a very small incremental increase relative to existing traffic in this oil, conventional natural gas, and CBNG development area.

Page 25 of the EA addresses contingency planning for accidental releases; more detailed information is provided in the AREIS Hazardous Materials Management Summary, which provides requirements for the proponent to follow with regards to spill reporting and response, above and beyond other regulatory requirements (e.g., CERCLA, RCRA, EPCRA, etc.).

5. Double Eagle Petroleum Company

- a) **“BLM’s decision to interpret its rules and NEPA... goes beyond what is reasonable (sic) foreseeable and therefore exceeds the authority BLM has... This issue was also raised by the [WDEQ]... following their review of a draft of the EA as a contributing agency.”**

The BLM is obligated under NEPA and BLM policy to analyze and disclose potential impacts from BLM-authorized activities taking place on BLM-administered public lands. We believe the EAs have been prepared consistent with BLM policy.

- b) **“The proposed action is a pilot project which will analyze the economic benefits of treating production water from coalbed methane wells... Several members of the United States Senate have proposed a congressional bill to investigate and invest in processes that develop water resources, particularly oil and gas production water... The EA should acknowledge the congressional bill and promote its advancement.”**

The BLM has followed applicable rules, regulations, and policy in reviewing the proposed action; it is outside the scope of this analysis to promote pending U.S. legislation.

6. Hugh Lowham – Double Eagle Consultant

The report prepared by Lowham Engineering LLC specifically addresses discharge of produced water to the ephemeral tributaries under the original proposal/original EA. With the revision of the proposed action, no substantive comments were identified.

7. U.S. Department of the Interior - Fish and Wildlife Service

- a) **“...WET testing may not detect impaired reproduction resulting from selenium bioaccumulations in fish.”**

A new Biological Assessment was provided to the Fish and Wildlife Service (see Appendix C to the EA). In a Biological Opinion issued October 9, 2007, the USFWS stated: “Based on the above project information the Service concurs with the Bureau that surface discharge of produced water from the Catalina Unit disposal facility project, as described in this letter, ‘may affect, but is not likely to adversely affect’ the endangered fish of the Upper Colorado River Basin.”

- b) **“Based on the timeline of events described in the EA, it seems clear that industry was considering surface discharge of produced water prior to completion of the [AREIS]... A new EIS, or perhaps an amendment to the existing EIS, may be appropriate if impacts from this proposal are determined to be significant.”**

We are not aware that, beyond this pilot project, industry is considering surface disposal of produced water on a wider scale. Should additional proposals be received by the BLM for surface disposal of produced water, the BLM will follow BLM policies and NEPA regulations in considering whether to prepare an EIS. It is very possible that the BLM would require an EIS for any additional proposals to discharge produced water to the surface in the AREIS area, should such proposals be received by the BLM.

- c) **“The EA should include a spill contingency plan specific to the transportation of hydrochloric acid to the water treatment facility.”**

See answer to #4(f), above.

- d) **“The EA should specify whether the concentrated brine would be stored in open ponds or in closed storage tanks.”**

The concentrated brine will be stored in closed storage tanks (see EA at Appendix A: facility diagram showing “100 bbl brine tank”).

- e) **[Several concerns regarding selenium, cyanide, and phenol were brought forward and discussed].**

Table 8 on page 19 of the original EA displayed incorrect units in several instances. These have been corrected in the new EA. As a result, cyanide and phenol toxicities are not predicted. Selenium toxicity has been addressed in the revised EA and Biological Assessment (see answer to #7(a), above).

8. Wyoming Outdoor Council

- a) **“The proposed action does not consider the potential affects (sic) of withdrawal of produced water from coal seams.”**

Authorization of the proposed action would not authorize withdrawal of produced water from coal seams. Such actions have been addressed under previous analyses and authorizations, such as the AREIS and individual Applications for Permit to Drill.

- b) **“The EA does not specify what beneficial use, if any, the discharged water will be put to.”**

The EA discloses that the produced water will be disposed of in order to facilitate natural gas production (see page 3 of the EA). The BLM does not believe that there are statutory requirements for the BLM to designate beneficial uses of the produced water; this authority is largely exercised by the primacy state.

- c) **“The Catalina Unit EA is inconsistent with the Atlantic Rim [ROD].”**

This is incorrect. The ROD (page 15) says: “Additional uses of ARPA-produced water, while not identified or proposed at this time, may develop or arise in the future. When and if such proposals are made, state of Wyoming approval under the state's various permitting authorities would be required. In addition, the BLM would review and approve or disapprove any such proposal based on the specifics of the proposal and the BLM's authorities and responsibilities under NEPA and FLPMA.” This EA, then, is consistent with the ROD.

- d) **“More analysis should be conducted to determine the likelihood and results of an accidental breach or release of HCl... There is no mention... of contingent (sic) plans for storage of the produced water if the treatment facility goes off line.”**

See answer to #4(f), above.

Onshore Oil and Gas Order #7 requires that an oil & gas operator on federal leases, as in this instance, must receive prior approval for produced water disposal methods (“...the

operator may not dispose of produced water unless and until approval is obtained from the authorized officer.”). Should the treatment facility go off-line, the operator may use alternate, previously-approved means of produced water disposal for applicable wells (e.g., reinjection wells, discharge under WYPDES #WY0042145). No other means of water disposal are currently authorized, and would require a new proposal and BLM authorization prior to implementation.

- e) **“...a more detailed analysis of the cumulative impacts of the proposed action... should be conducted.”**

A detailed cumulative impacts analysis is provided (see pages 26-29 of the EA). This comment provides no substantive detail why the cumulative impacts analysis is inadequate, or inconsistent with the purpose of an EA.

- f) **“The no action alternative should be considered...”**

See page 7 of the EA.

9. Wyoming Department of Agriculture

- a) **“...there is no analysis of the impacts of this proposal upon livestock grazing and grazing permittees...”**

Please refer to the EA, page 20.

10. Biodiversity Conservation Alliance

- a) **“The cumulative impacts analysis in the Catalina EA makes no assessment of the environmental consequences which accompany the pending proposal to permit drilling of up to 2,000 [wells] in the ARPA...”**

The EA acknowledges, and incorporates by reference, the expected development under the AREIS. The cumulative impacts analysis also discloses and considers the AREIS development (see page 26 of the EA). Not all 2,000 AREIS wells would be located within this project’s CIAA; the most-recently available WOGCC data were used to consider potential development within this CIAA (WOGCC approved permits/not yet drilled that would be authorized under the AREIS ROD are included in the impacts analysis, see map page 28).

- b) **“...the Catalina EA proposes a wholly inconsistent method [relative to the AREIS ROD] of wastewater disposal, that of treatment and surface disposal...”**

See answer to #8(c), above.

- c) **“No offset for a loss of artesian springs has been noted in the EA.”**

See answer to #8(a), above.

- d) **“...WET testing should occur directly on captive members of the BLM species in order to provide the most predictive results...”**

The procedures and protocol for WET tests are developed by the Wyoming DEQ; the BLM understands that the procedures are developed in consultation with other federal agencies. It is outside the scope of this project to develop and mandate the DEQ change their WET test procedures and protocol.

- e) **“The BLM makes no attempt to estimate the level of cumulative impacts that this project will have on native fish populations when taken together with the erosion, salt inputs, and sedimentation expected from the Atlantic Rim project as a whole....”**

The EA (see page 27) identifies an incremental, additional impact to the CIAA resources, including soils, water, vegetation, invasive weed infestations, etc. The CIAA for water resources and aquatic wildlife was expanded (see rationale discussion, page 27).

11. Wyoming Department of Environmental Quality

- a) **“A reopener provision is included in all WYPDES permits to ensure that all water quality standards and designated uses are protected [for the purpose of addressing unforeseen concerns that arise].”**

No response required.

- b) **“...various agencies and stakeholders have differing options [opinions] on the threshold criterion for selenium and the potential risks to wildlife... ...the appropriate forum to address these concerns is during the formal triennial review of WQD’s Surface Water Quality Standards...”**

The BLM has addressed selenium bioaccumulation potential in the EA and BA sent to the FWS; the BLM must respond to other agency concerns, although we recognize the primacy of Wyoming is developing enforceable water quality standards.

12. Wyoming Game and Fish Department – 11/19/2007

- a) **“...expected significant impacts on Sensitive Fish Species... would appear to warrant a supplemental EIS to the Atlantic Rim ROD... It would be reasonable to do a NEPA analysis for the expected cumulative discharges and impacts, and to develop alternatives with the State of Wyoming for dealing with the water.”**

See answers to #1(b), #7(b), and #8(c).

- b) **“If BLM approves Double Eagle’s request, we could expect additional and incremental EA’s to allow more surface discharges throughout the Atlantic Rim development area. This would preclude a meaningful disclosure and analysis of the significant cumulative effects of all discharges.**

Should additional proposals for surface discharge be submitted to the BLM in the ARPA, the BLM would consider those proposals and may determine that an EIS is necessary to consider the potentially significant impacts (including cumulative impacts). The BLM is proceeding consistent with BLM policy and NEPA regulations/CEQ guidance.

13. Little Snake River Conservation District – 11/15/2007

- a) **“The EA did not discuss the benefits of treated produced water being used to supplement existing perennial flows in the Muddy Creek system as it relates to the existing wetlands and irrigated pastures.”**

Using produced water to supplement flow to the LSRC D-managed wetlands and downstream irrigated pastures is not a part of the proposed action.

- b) **“...We believe that a heightened monitoring requirement for both water quality and quantity including stream channel morphology should be considered by the BLM as a condition of approval of the proposed action...”**

The Wyoming DEQ has provided water quality effluent criteria and a limitation for water quantity discharged in the WYPDES authorization. Consistent with Onshore Oil and Gas Order #7, “Operations from the point of origin to the point of discharge are under the jurisdiction of the BLM. Operations from the point of discharge downstream are under the jurisdiction of EPA or the primacy State.” Should significant adverse impacts be predicted to water quality/quantity-affected resources under the EA, the BLM would not be able to issue a Finding of No Significant Impact.

- c) **“...the BLM fails to disclose the possible effects regarding the waste stream that will certainly be produced by the treatment process and fails to discuss how those substances will be handled and disposed of...”**

Please refer to the EA at page 6. The waste stream from treatment will be disposed of under UIC regulations promulgated by the State of Wyoming.

- d) **“...the possibility may arise that significantly more treated produced water may be disposed on the surface rather than being re-injected, and the need for further coordinated evaluation and study at the watershed level for large scale water disposal is necessary...”**

Please see answers to #4(b) and #1(b).

Appendix C to the Decision Record

Sundry Notice Conditions of Approval

1. A notice to proceed will be issued when cultural clearance has been granted and the request for cultural resources determination has been returned.
2. Prior to discharge, Double Eagle will establish eight (8) permanent photo-points (four (4) of which will be located at required WYPDES WY0054038 water quality monitoring station locations: Muddy Creek upstream and downstream of discharge point, Muddy Creek at mouth, and Little Snake River below confluence with Muddy Creek). Additional sites and a photo monitoring plan will be established in cooperation with the Bureau of Land Management Authorized Officer (AO) with the objective of capturing changes in channel morphology, pool connectivity, and riparian conditions. Photo monitoring would occur prior to discharge, then monthly for two years following initial discharge. However, the BLM AO may request a change in the photo-taking frequency at any time. Photos (and any other supporting documentation) will be digitally provided to the BLM AO within 30 calendar days of any given monitoring event. To ensure that similar techniques are used repeatedly, all photos will be taken at the exact location and would include the same landscape and skyline and include the same aspect, equipment type, distance, and bearing. Reference markers should be used to align successive photos. Photo monitoring will consist of at least 3 photos of each station: one looking upstream from the marker, one looking downstream from the marker, and one looking across the stream from the marker. Each photograph should be identified by site name, photograph number, date, observer, and time. Such monitoring can provide qualitative and quantitative trend information on channel conditions, erosional patterns, plant density, vegetation composition, and sensitive fish habitat.
3. The Operator shall provide the BLM Authorized Officer with copies of all reports and data required by the Wyoming Department of Environmental Quality (WDEQ) in the Wyoming Pollution Discharge Elimination System (WYPDES) Permit # WY0054038. This shall include, but is not limited to, the (1) water quality reporting requirements, (2) acute & chronic WET testing results, and (3) flow monitoring requirements. The reports and data shall be provided to the BLM AO concurrently with submission to the WDEQ.
4. The operator shall comply with any provisions of the Hazardous Materials Management Summary provided in the Atlantic Rim Natural Gas Field Development Project Final EIS (Appendix C). The BLM shall be notified immediately should any hazardous materials be released from facilities or activities provided for under this authorization. BLM notification does not replace any obligations for reporting under other regulations, acts, or authorities.
5. Double Eagle Petroleum Company is required to monitor selenium concentrations at a detection level of 1 ug/L, and to submit the water quality reports, as required by the WYPDES permit, to the Bureau for review.
6. Construction, drilling and other activities potentially disruptive to nesting raptors are prohibited during the period of February 1 to July 31 for the protection of raptor nesting areas.
7. Construction, drilling, reclamation and other potentially disruptive activities are prohibited during the period of March 1 to July 15 for the protection of sage grouse.

8. Construction, drilling, reclamation and other potentially disruptive activities are prohibited during the period of November 15 to April 30 for the protection of big game winter habitat.
9. All facilities not requiring safety coloration shall be painted with non-reflective Shale Green (5Y 4/2).
10. Operations under this approval shall comply with the Master Surface Use Plan and Conditions of Approval for Catalina POD A.